Docket No. TIOG-004

APPLICATION

FOR UNITED STATES LETTERS PATENT

SPECIFICATION

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN THAT we, **Lee Martinson**, a citizen of the United States, **Steven Eide**, a citizen of the United States, **Clifford Keever**, a citizen of the United States, and **Scott Lledle**, a citizen of the United States, have invented a new and useful drive belt stabilizer system of which the following is a specification:

Drive Belt Stabilizer System

CROSS REFERENCE TO RELATED APPLICATIONS

I hereby claim benefit under Title 35, United States Code, Section 120 of United States patent application Serial Number 10/015,343 filed December 11, 2001. This application is a continuation of the 10/015,343 application. The 10/015,343 application is currently pending. The 10/015,343 application is hereby incorporated by reference into this application.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

Not applicable to this application.

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates generally to drive belt devices and more specifically it relates to a drive belt stabilizer system for reducing non-longitudinal movement of a drive belt during operation.

Description of the Prior Art

Drive belt systems have been in use for years. Typically, a motor includes a drive pulley that receives a portion of the drive belt which extends about a secondary pulley for driving machinery such as an oil well pumping unit. The drive belt may have various configurations such as but not limited to a flat structure. Because of the relatively long lengths of some drive belts (e.g. greater than six feet), oscillating movements within the return portion of the drive belt are common. The oscillating movements of the drive belt increase wear upon the machinery and the drive belt. The oscillating movements also contribute to decreased motor life. Over time, the drive belt becomes longer thereby providing more slack within the drive belt which contributes to increased non-longitudinal movements of the drive belt (often times referred to as "jumping").

While these devices may be suitable for the particular purpose to which they address, they are not as suitable for reducing non-longitudinal movement of a drive belt during operation. Conventional drive belt systems do not provide a means that accommodates various fluctuations within a drive belt while simultaneously maintaining the return portion of the drive belt in a relatively taut manner to reduce non-longitudinal movements.

In these respects, the drive belt stabilizer system according to the present invention substantially departs from the conventional concepts and designs of the prior art, and in so doing provides an apparatus primarily developed for the purpose of reducing non-longitudinal movement of a drive belt during operation.

SUMMARY OF THE INVENTION

In view of the foregoing disadvantages inherent in the known types of drive belt devices now present in the prior art, the present invention provides a new drive belt stabilizer system construction wherein the same can be utilized for reducing non-longitudinal movement of a drive belt during operation.

The general purpose of the present invention, which will be described subsequently in greater detail, is to provide a new drive belt stabilizer system that has many of the advantages of the drive belt devices mentioned heretofore and many novel features that result in a new drive belt stabilizer system which is not anticipated, rendered obvious, suggested, or even implied by any of the prior art drive belt systems, either alone or in any combination thereof.

To attain this, the present invention generally comprises a base, a lower member attached to the base, an upper member slidably positioned about the lower member in a vertical manner, a support stand attached to the upper member, a roller rotatably positioned within the support stand, a compression spring positioned within the lower member and the upper member for applying an expanding force relative thereto, and a securing shaft extending though the base and secured to the support stand for limiting the upward movement of the upper member. The roller is positioned beneath the return portion of a drive belt to be supported. A threaded nut is adjusted upon the securing shaft for adjusting the maximum height of the roller with respect to the drive belt.

There has thus been outlined, rather broadly, the more important features of the invention in order that the detailed description thereof may be better understood, and in order that the present contribution to the art may be better appreciated. There are

additional features of the invention that will be described hereinafter and that will form the subject matter of the claims appended hereto.

In this respect, before explaining at least one embodiment of the invention in detail, it is to be understood that the invention is not limited in its application to the details of construction and to the arrangements of the components set forth in the following description or illustrated in the drawings. The invention is capable of other embodiments and of being practiced and carried out in various ways. Also, it is to be understood that the phraseology and terminology employed herein are for the purpose of the description and should not be regarded as limiting.

A primary object of the present invention is to provide a drive belt stabilizer system that will overcome the shortcomings of the prior art devices.

A second object is to provide a drive belt stabilizer system for reducing non-longitudinal movement of a drive belt during operation.

Another object is to provide a drive belt stabilizer system that may be utilized upon various types, sizes, lengths and structures of drive belt systems.

An additional object is to provide a drive belt stabilizer system that is capable of absorbing fluctuations within a drive belt based upon variations in the load and other external factors.

A further object is to provide a drive belt stabilizer system that is adjustable.

Another object is to provide a drive belt stabilizer system that is comprised of a simple construction.

Other objects and advantages of the present invention will become obvious to the reader and it is intended that these objects and advantages are within the scope of the present invention.

To the accomplishment of the above and related objects, this invention may be embodied in the form illustrated in the accompanying drawings, attention being called to the fact, however, that the drawings are illustrative only, and that changes may be made in the specific construction illustrated and described within the scope of the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

Various other objects, features and attendant advantages of the present invention will become fully appreciated as the same becomes better understood when considered in conjunction with the accompanying drawings, in which like reference characters designate the same or similar parts throughout the several views, and wherein:

FIG. 1 is an upper perspective view of the present invention in an expanded position.

FIG. 2 is an upper perspective view of the present invention in a contracted position.

FIG. 3 is a cross sectional view taken along line 3-3 of Figure 1.

FIG. 4 is a cross sectional view taken along line 4-4 of Figure 2.

FIG. 5 is an exploded upper perspective view of the present invention.

FIG. 6 is an upper perspective view of the present invention positioned beneath a return portion of a drive belt in a contracted position.

FIG. 7 is an upper perspective view of the present invention positioned beneath a return portion of a drive belt in an extended position for maintaining the return portion taut.

FIG. 8 is an upper perspective view of the present invention positioned beneath a return portion of a drive belt within an oil well pumping unit.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Turning now descriptively to the drawings, in which similar reference characters denote similar elements throughout the several views, FIGS. 1 through 8 illustrate a drive belt stabilizer system **10**, which comprises a base **20**, a lower member **30** attached to the base **20**, an upper member **40** slidably positioned about the lower member **30** in a vertical manner, a support stand **50** attached to the upper member **40**, a roller **60** rotatably positioned within the support stand **50**, a compression spring **74** positioned within the lower member **30** and the upper member **40** for applying an expanding force relative thereto, and a securing shaft **70** extending though the base **20** and secured to the support stand **50** for limiting the upward movement of the upper member **40**. The roller **60** is positioned beneath the return portion of a drive belt **12** to be supported. A threaded nut **72** is adjusted upon the securing shaft **70** for adjusting the maximum height of the roller **60** with respect to the drive belt **12**.

As shown in Figures 1 through 8 of the drawings, the base **20** is a relatively broad structure for providing support to the structure. The base **20** may have various shapes, sizes and structures as can be appreciated. The base **20** may have a plurality of apertures within for receiving fasteners or similar securing devices to secure the base **20** to a stable structure to prevent movement thereof.

As shown in Figures 1 through 7 of the drawings, a lower member **30** is attached to an upper surface of the base **20**. The lower member **30** is preferably comprised of an elongate tubular structure for receiving the compression spring **74** within as best illustrated in Figures 3 through 5 of the drawings. The lower member **30** extends traversely from the upper surface of the base **20** as best illustrated in Figures 3 and 4 of the drawings.

An upper member **40** is slidably positioned about the lower member **30** as best shown in Figures 1 through 7 of the drawings. It can be appreciated that the upper member **40** may be slidably positioned within the lower member **30** though not illustrated within the figures. The upper member **40** is comprised of an elongate tubular structure preferably having a cross section similar to the lower member **30**. The upper member **40** is preferably formed to easily slide with respect to the lower member **30** while maintaining a relative parallel position with respect to the lower member **30** at all times.

As shown in Figures 1 through 7 of the drawings, a support stand **50** is attached to an upper end of the upper member **40**. The support stand **50** is comprised of a U-shaped structure as best shown in Figures 3 and 4 of the drawings. The support stand **50** is comprised of a cross member **52** attached to the upper member **40**, a first member **54** extending upwardly from one end of the cross member **52**, and a second member **56** extending upwardly from an opposing end of the cross member **52** as shown in Figures 3 and 4 of the drawings. The first member **54** and the second member **56** are substantially parallel to one another as best illustrated in Figures 3 and 4 of the drawings.

The first member **54** and the second member **56** each include at least one aperture for receiving a fastener **62** that rotatably secures a roller **60** between thereof. The roller **60** may be comprised of various types of materials, sizes and diameters. However, the roller **60** preferably is comprised of a nylon material. In addition, the roller **60** preferably has a length of at least two times greater than the diameter thereof. The roller **60** may include bearings within for reducing frictional rotation thereof upon the fastener **62**. The fastener **62** may be secured using a conventional nut or similar locking device. The roller **60** is preferably positioned within an upper portion of the support stand **50** for freely engaging the drive belt **12** and for reducing engagement with the securing shaft **70** during movement

of the support stand **50**. The roller **60** may also be rotatably positioned within the support stand **50** without the usage of a fastener **62** by utilizing opposing axles or related structures.

As shown in Figures 3 through 5 of the drawings, a compression spring **74** is positioned within the upper member **40** and the lower member **30** for applying an outward extending force to the upper member **40**. The compression spring **74** may be comprised of various spring structures and forces. The upper end of the compression spring **74** engages the cross member **52** while the lower end of the compression spring **74** engages the upper surface of the base **20** as shown in Figures 3 and 4 of the drawings.

As best shown in Figures 3 through 5 of the drawings, a securing shaft **70** extends through the base **20** and the cross member **52**. The securing shaft **70** is positioned within the compression spring **74**, upper member **40** and the lower member **30** as shown in Figures 3 and 4 of the drawings. The securing shaft **70** has an upper threaded portion that threadably receives a threaded nut **72** for adjusting the maximum upward extension of the upper member **40** and support stand **50**.

In use, the user secures the base **20** to a location positioned beneath the return portion of the drive belt **12** as shown in Figure 8 of the drawings. The user then adjusts the maximum height of the roller **60** by rotating the threaded nut **72** upon the securing shaft **70** thereby limiting the upward movement of the upper member **40** and support stand **50** with respect to the lower member **30** and base **20**. When the drive belt **12** is operated, the roller **60** rotates along with the movement of the drive belt **12** to reduce resistance upon the drive belt **12**. When the return portion of the drive belt **12** encounters an increased force of tautness, the force of the drive belt **12** causes the drive belt **12** to straighten thereby applying a downward force upon the roller **60** and support stand **50**. The downward force applied to the roller **60** causes the upper member **40** to slide downwardly upon the lower member **30** thereby compressing the

compression spring **74**. When the upper member **40** slides downwardly, the upper threaded portion of the securing shaft **70** is exposed further as the upper member **40** and the support stand **50** slide over the securing shaft **70** via an aperture **58** within the cross member **52**. When the force is removed from the drive belt **12**, the upper member **40** moves upwardly to the original position to maintain the drive belt **12** in a relatively taut state.

As to a further discussion of the manner of usage and operation of the present invention, the same should be apparent from the above description. Accordingly, no further discussion relating to the manner of usage and operation will be provided.

With respect to the above description then, it is to be realized that the optimum dimensional relationships for the parts of the invention, to include variations in size, materials, shape, form, function and manner of operation, assembly and use, are deemed to be within the expertise of those skilled in the art, and all equivalent structural variations and relationships to those illustrated in the drawings and described in the specification are intended to be encompassed by the present invention.

Therefore, the foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the invention.